CALIFORNIA ENERGY COMMISSION
1516 NINTH STREET
SACRAMENTO, CA 95814-5512

DATE: March 17, 2003

TO: Interested Parties

FROM: Nancy Tronaas, Compliance Project Manager

SUBJECT: **Sunrise Power Project (98-AFC-4C)**
Public Review of Staff Analysis of Proposed Project Modifications
CEMS Monitor; Commissioning Emissions; Startup/Shutdown

On February 7 and February 20, 2003, the Sunrise Power Company filed petitions with the California Energy Commission (Energy Commission) to amend the air quality Conditions of Certification of the Energy Commission Decision for the Sunrise Power Project (SPP). SPP is a 320 MW simple-cycle, natural gas-fired power plant that was certified in December 2000, and commenced operation in June 2001. In November 2001, the Energy Commission approved the expansion of SPP to a nominal 585 MW combined-cycle power plant that is currently under construction and scheduled for commercial operation in summer 2003. SPP is located approximately 35 miles southwest of Bakersfield, and one mile southwest of the intersection of State Route 33 and Shale Road in Kern County, California.

The petitions request revisions to the air quality conditions of certification to: (1) clarify that the combustion turbine generator exhaust located after the selective calalytic reduction unit be equipped with continuous emission monitors, (2) establish parameters for the measurement of nitrous oxides/ammonia slip, (3) clarify the emission measurement time periods during startup and shutdown, and (4) allow for a temporary increase in criteria air pollutants during commissioning activities that will occur intermittently during spring 2003 for the combined cycle expansion.

Energy Commission staff reviewed the petitions and assessed the impacts of the proposed modifications on environmental quality, public health and safety. It is the Energy Commission staff's opinion that, with the implementation of staff's proposed revised conditions of certification, the project will remain in compliance with applicable laws, ordinances, regulations, and standards, and that the proposed project modification will not result in a significant adverse direct or cumulative impact to the environment (*Title 20, California Code of Regulations, Section 1769).*

The staff analysis is attached for your information and review. Energy Commission staff intends to recommend approval of the petition at the April 16, 2003 Business Meeting of the Energy Commission. If you have comments on this proposed project change, please submit them to me at the address above no later than 5 P.M on April 15, 2003. If you have any questions, please call me at (916) 654-3864 or e-mail at ntronaas@energy.state.ca.us.
Attachment

SUNRISE POWER PROJECT (98-AFC-4)
REQUEST TO AMEND THE AIR QUALITY CONDITIONS OF CERTIFICATION COMMISSIONING EMISSIONS, CEMS, and START-UP/SHUT DOWN
STAFF ANALYSIS
March 6, 2003

AMENDMENT REQUEST

The Sunrise Power Company, LLC (SPC) has petitioned to amend several Conditions of Certification in the Air Quality section of the Commission Decision for the Sunrise Power Project II. These amendments fall into three general categories: initial commissioning activities required for the combined cycle facility, minor inconsistency regarding the NOx continuous emission monitoring system and minor modifications to the startup and shutdown definitions.

BACKGROUND

Sunrise is located approximately 35 miles southwest of Bakersfield in Kern County. The original Sunrise Cogeneration and Power Project application for certification was filed with the Energy Commission in 1998 for a cogeneration facility that would generate electricity for sale and produce steam for use in the adjacent oilfields in thermally-enhanced oil recovery processes. In September 2000, the applicant modified the cogeneration project to a simple-cycle peaking power project to deliver 320 MW of power for the peak demand of summer 2001. The simple-cycle Sunrise Power Project was certified on December 6, 2000, construction began on December 7, 2000, and commercial operation commenced on June 26, 2001.

On May 14, 2001, SPC filed a petition to convert the simple-cycle power plant to a combined-cycle power plant (Sunrise II). This expansion is to add approximately 265 MW of generating capacity, resulting in a nominal 585 MW combined-cycle power plant. In accordance with Executive Order D-25-01 of the Governor of the State of California, dated February 8, 2001, the petition was processed as a project amendment rather than as a new application for certification. The Energy Commission approved the petition on November 19, 2001, and construction on Sunrise II commenced on December 21, 2001. Sunrise II is currently under construction and is scheduled for commercial operation in summer 2003.

Sunrise II includes two General Electric Frame 7FA combustion turbines with two duct-fired heat recovery steam generators (HRSG) and one 265 MW steam turbine generator (STG). Sunrise II uses an ammonia injected selective catalytic reduction system (SCR) to control NOx emissions and an oxidation catalyst to control CO and VOC emissions. Sunrise includes an evaporative condenser cooling tower system, a 15.5 mile water line and injection wells for wastewater disposal.

LAWS, ORDINANCES, REGULATIONS, OR STANDARDS

No laws, ordinances, regulations or standards will be affected by the petitioned amendment requests. Sunrise will remain in compliance with all LORS if the petition is approved.

ANALYSIS

NOx CEMS

SPC is required to measure NOx concentrations in the stack both before and after the SCR, in order to determine (by chemical balance) the amount of unreacted ammonia leaving the stack. Condition of Certification AQ-7 inadvertently requires the pre-SCR monitor to be compliant with 40 CFR part 60 and 75. However, this is not intended and is not possible, as one of the requirements of this section is to have the monitor located down stream of all emission control systems (including the SCR). Therefore, SPC is requesting that this requirement be struck from AQ-7 and that the installation and operational requirements of the pre-SCR monitor be set forth in a new Condition of Certification (AQ-60).

Commissioning

Commissioning will consist of two distinct phases for the Sunrise II facility. First will be steam blows, which are a common practice, used to clean and clear HRSG piping and ducting. During this period the SCR, oxidation catalyst and continuous emission monitoring systems will not be in place to prevent contamination and damage. This phase is expected to last between 15 and 20 days, with steam blows occurring intermittently throughout the day. The second phase will include startups and tuning. The SCR, oxidation catalyst and CEMS will be installed. Loads will be varied and will include full load, and the ammonia injection system will be tuned.

The San Joaquin Valley Air Pollution Control District (District) has issued a variance (No. S-02-46R) on December 11, 2002, for the commissioning activities described above. The entire commissioning period is to take place between March 1, 2003 and December 31, 2003, but is to take no more than 120 days of operation. NOx emissions are limited to 17,770 lbs/day during both phases. CO emissions are limited to 27,513 lbs/day during phase I and 3,345 lbs/day during phase II. NOx and CO emissions are to be recorded (via source testing and/or CEMS) and are to be mitigated by the surrender of emission reduction credits (ERCs), which has already occurred. The commissioning of Sunrise II is not expected to exceed the current PM10 or SO2 daily limits. Based on the most reasonable expectations, Commissioning Sunrise II should have no more than 34 days of excess NOx and CO emission (thus the need for elevated emission limits during commissioning). Staff has reviewed the analysis provided in the District variance and concurs with the conclusions reached.

In order to allow SPC to complete their commissioning of Sunrise II, it is necessary to temporarily suspend Conditions of Certification AQ-7, -10, -14, -15, -16, -20, -22, -49 and –50 for the duration of the commissioning period. Staff recommends that SPC be

required to report emission monitoring information to the Compliance Project Manager (CPM) for review (see Condition of Certification AQ-61).

Definition of Startup and Shutdown

In order to clarify the beginning and end of startup and shutdown as occurring on the clock hour, SPC has proposed minor modifications of Conditions of Certification AQ-10, -14, –15 and -49.

CONCLUSIONS AND RECOMMENDATIONS

Staff analyzed the proposed changes and concludes that, with the addition of Conditions of Certification AQ-60 and AQ-61 and the proposed modification of Conditions of Certification AQ-7, -10, -14, -15 and -49, there will be no new or additional significant impacts associated with approval of the petition. Staff concludes that the proposed changes are based on information that was not available during the original licensing procedures. Staff concludes that the proposed language retains that intent of the original Commission Decision and Conditions of Certification.

PROPOSED REVISIONS TO EXISTING AIR QUALITY CONDITIONS OF CERTIFICATION

Deleted text is shown in ~~strikethrough~~ and new text is underlined.

AQ-7 CTG exhaust after the SCR unit shall be equipped with continuously recording emissions monitor(s) dedicated to this unit for NOx , CO, and O2. Continuous emissions monitor(s) shall meet the requirements of 40 CFR part 60, Appendices B and F, and 40 CFR part 75, and District-approved protocol and shall be capable of monitoring emissions during normal operating conditions and during startups and shutdowns, provided the CEM(s) pass the relative accuracy requirement specified in condition AQ-23. If relative accuracy of CEM(s) cannot be demonstrated during startup conditions, CEM results during startup and shutdown events shall be replaced with startup emission rates obtained from source testing to determine compliance with emission limits in Conditions AQ-14, -15, -16, and -17. [District Rule 2201]

Verification: The project owner shall make the site available for inspection by representatives of the District, CARB and the Commission.

AQ-10 Startup is defined as the period beginning with turbine initial firing ~~until the unit meets the lbs/hr and ppmvd emission limits in Condition AQ-15~~. Shutdown is defined as the period beginning with initiation of turbine shutdown sequence and ending with cessation of firing of the gas turbine engine. Startup and shutdown duration shall not exceed a time period of ~~40 minutes~~ 4 hours each per occurrence. [District Rule 2201 and 4001]

Verification: The project owner shall provide records of the emissions and operations as part of the quarterly reports of Condition AQ-31.

AQ-14 During startup or shutdown of any combustion turbine generator(s), combined emissions from the two CTGs (S-3746-1 and '-2) shall not exceed the following:

For simple cycle mode of operation

NOx	145.24 lbs in any one hour
CO	364.86 lbs in any one hour

For combined cycle mode of operation

NOx	700 lbs in any one hour
CO	1,580 lbs in any one hour

Protocol: If any unit is in either startup or shutdown mode during any portion of a clock hour, the facility will be subject to ~~AQ-14~~ aforementioned limits during that clock hour.

Verification: The project owner shall provide records of the emissions as part of the quarterly reports of Condition AQ-31.

AQ-15 Emission rates from each CTG, except during startup and shutdown events, shall not exceed any of the following:
[District Rules 2201, 4001, and 4703]

While operating in simple cycle mode:

PM10	9 lbs/hr
SOx (as SO2)	3.85 lbs/hr.
NOx (as NO2)	60.93 lbs/hr.
	9.0 ppm
VOC	2.81 lbs/hr.
	1.3 ppm
CO	29.14 lbs/hr.
	7.5 ppm

NOx (as NO2) ~~emission~~ mass and concentration emission limits are ~~is a~~ one-hour rolling averages. All other ~~emission~~ mass and concentration emission limits are three-hour rolling averages.

While operating in combined cycle mode:

PM10:	17.8 lbs/hr
SOx (as SO2):	1.55 lbs/hr
NOx (as N02):	15.96 lbs/hr and 2.0 ppmvd @ 15% O2
VOC:	5.51 lbs/hr and 2.0 ppmvd @ 15% O2
CO:	19.22 lbs/hr and 4.0 ppmvd @ 15% O2
Ammonia:	10 ppmvd @ 15% O2

NOx (as NO2) ~~emission~~ mass and concentration emission limits are ~~is a~~ one-hour rolling averages. Ammonia emission concentration limit is a 24-hour rolling

average. All other ~~emission~~ mass and concentration emission limits are three-hour rolling averages.

Protocol: Each one-hour period in a one-hour rolling average will commence on the hour. Each one-hour period in a 3-hour rolling average will commence on the hour. The 3-hour average will be compiled from the three most recent 1-hour periods. 24-hour average emissions will be compiled for a 24-hour period starting and ending at twelve-midnight. If a unit is in either startup or shutdown mode during any portion of a clock hour, that unit will not be subject to ~~AQ-15~~ aforementioned limits during that clock hour. [District Rule 2201]

Verification: The project owner shall provide records of the emissions as part of the quarterly reports of Condition AQ-31.

AQ-49 By ~~No more than~~ two hours after turbine initial firing, CTG exhaust emissions shall not exceed any of the following:

NOx (as NO2): 10.3 ppmv @ 15% O2
CO: 25. ppmv @ 15% O2
[District Rule 4703]
Compliance with the aforementioned limits will commence on the clock hour following the 120th minute after initial firing. These emission limits are three hour rolling averages.

Verification: The project owner shall provide records of the emissions as part of the quarterly reports of Condition AQ-31.

PROPOSED NEW CONDITION OF CERTIFICATION AQ-60
(Consistent with the corresponding condition in the District's Authority to Construct)

AQ-60 The CTG shall be equipped with a continuously recording emission monitor preceding the SCR module measuring NOx concentration for the purpose of calculating ammonia slip. The owner/operator shall check, record, and quantify the calibration drift (CD) at two concentration values at least once daily (approximately 24 hours). The calibration shall be adjusted whenever the daily zero or high-level CD exceeds 5%. If either the zero or high-level CD exceeds 5% for five consecutive daily periods, the analyzer shall be deemed out-of-control. If either the zero or high-level CD exceeds 10% during any CD check, the analyzer shall be deemed out-of-control. If the analyzer is out-of-control, the owner/operator shall take appropriate corrective action and then repeat the CD check. [District Rule 2201]

Verification: The project owner shall provide either the CD checks that resulted in the analyzer being declared out-of-control or a statement that no CD checks resulted in the analyzer being declared out-of-control as part of the quarterly reports of Condition AQ-31.

PROPOSED NEW CONDITION OF CERTIFICATION AQ-61
(Consistent with the constraints and reporting requirements of the District Variance No. S-02-46R issued on December 11, 2002)

AQ-61 Relief shall be granted from Conditions of Certification AQ-7, AQ-10, AQ-14, AQ-15, AQ-16, AQ-20, AQ-22, AQ-49 and AQ-50 for the duration of the Commissioning period of the Sunrise Phase II combined cycle power project.

During Commissioning, NOx emissions shall not exceed 17,770 lbs/day.

During Commissioning but prior to the oxidation catalyst being installed, CO emissions shall not exceed 27,513 lbs/day.

During Commissioning and following the installation of the oxidation catalyst, CO emissions shall not exceed 5,703 lbs/day.

Commissioning activities shall not exceed 120 days cumulatively of operation. Commissioning activities shall occur between March 1, 2003 and December 31, 2003.

The owner/operator shall record and quantify, via CEMS or District approved source testing, the actual NOx and CO emissions associated with the Commissioning period, except for the first 24-hours after the first initial firing.

Verification: The project owner shall provide records of recorded emissions and operation as part of the quarterly reports of Condition AQ-31.